IDENTIFICATION OF CHIRAL BANDS IN ^{135}Ce

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Chirality has been predicted [1] in triaxial nuclei if angular momentum has substantial projections along all three principal axes. It has been observed in odd-odd nuclei in mass 130 region [2,3] with $\pi h_{11/2}\nu h_{11/2}$ configuration and in mass 80 region with $\pi g_{9/2}\nu h_{11/2}$ [4] configuration. It has also been recently reported in odd mass nucleus ^{135}Nd [5]. The present work reports the first identification of "Chiral bands" with unique and interesting features in ^{135}Ce. High spin states in ^{135}Ce were studied following the ^{124}Sn(^{16}O, 5n)^{135}Ce reaction with an array of 8 Compton suppressed clover detectors and a multiplicity filter consisting of 14 NaI(Tl) detectors. Target was made by rolling 1.6 mg/cm^2 thick enriched ^{124}Sn foil on a 12.8 mg/cm^2 thick Au backing. The spin vs frequency plot for the B3 and B5 bands in ^{135}Ce [6] show that they have nearly degenerate energies. Infact, the levels in two bands cross each other near the bandhead spin and again close to the highest spin. Both these bands have similar intensity and interband transitions have been observed in both directions i.e. from band B3 to B5 and vice-versa. The ratios of interband and intraband B(M1) values have been obtained. It has been concluded from these observations that bands B3 and B5 form the "Chiral doublet" in ^{135}Ce. The observation of crossover E2 transitions has enabled us to obtain $\frac{B(M1)}{B(E2)}$ ratios with increasing rotational frequency in both B3 and B5 bands. The measurement of lifetimes of levels in B5 band has provided B(M1) and B(E2) values with increasing rotational frequency for this band. Some of the results showing these unique features will be reported.

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